

Environmental Energy Technologies Division

Integrated Safety Management Plan



Rev 0: 6/5/98	Rev 4: 6/29/03	Rev 8: 10/1/07	Rev 12: 4/1/14
Rev 1: 10/20/99	Rev 5: 6/9/04	Rev 9: 12/18/08	
Rev 2: 6/23/01	Rev 6: 6/3/05	Rev 10: 2/22/12	
Rev 3: 7/10/02	Rev 7: 6/19/06	Rev 11: 2/25/13	

Environmental Energy Technologies Division Integrated Safety Management Plan

Rev 12- 4/1/14

1. Purpose

The purpose of this Integrated Safety Management Plan is to ensure that a safe and healthful workplace is provided to Environmental Energy Technologies Division (EETD) employees, affiliates, subcontractors, the public and the environment. This is accomplished through the implementation of the elements identified in this Plan.

2. Scope

The Environmental Energy Technologies Division (EETD) performs analysis, research and development leading to better energy technologies and reduction of adverse energy-related environmental impacts. Our work increases the efficiency of energy use, reduces its environmental effects, provides the nation with environmental benefits, and helps developing nations achieve similar goals through technical advice. The Environmental Energy Technology Division consists of three departments:

- Building Technology and Urban Systems (BTUS)
- Energy Analysis and Environmental Impacts (EAEI)
- Energy Storage and Distributed Resources (ESDR)

EETD has its operations located in LBNL Buildings 31, 46, 51F, 60, 62, 63, 64, 70, 71, 71T, 75C, 90, and FLEXLAB. There are also other off-site research locations. The EETD Safety Manager maintains a listing of all EETD work areas in each of these buildings.

The following publications are applicable to the scope of EETD's Integrated Safety Management Plan:

- [LBNL PUB-3851 "Worker Health and Safety Program"](#)
- [LBNL PUB-3111 "Operating and Quality Management Plan"](#)
- [LBNL PUB-3140 "LBNL Integrated Safety Management Plan"](#)
- [LBNL PUB-3000 "Health and Safety Manual"](#)
- [LBNL PUB-5341 "Chemical Hygiene and Safety Plan"](#)
- [LBNL PUB-3092 "Guidelines for Generators of Hazardous, Radioactive and Mixed Wastes"](#)
- [Regulations and Procedures Manual Section 7.01 "Environment, Safety & Health"](#)
- [10 Code of Federal Regulations, Part 851 "Worker Safety and Health Program"](#)

3. Integrated Safety Management

Integrated Safety Management (ISM) is a core principle used within EETD. EETD has integrated each of the five functions and seven principles of ISM from the LBNL Integrated Safety Management Plan (PUB-3140).

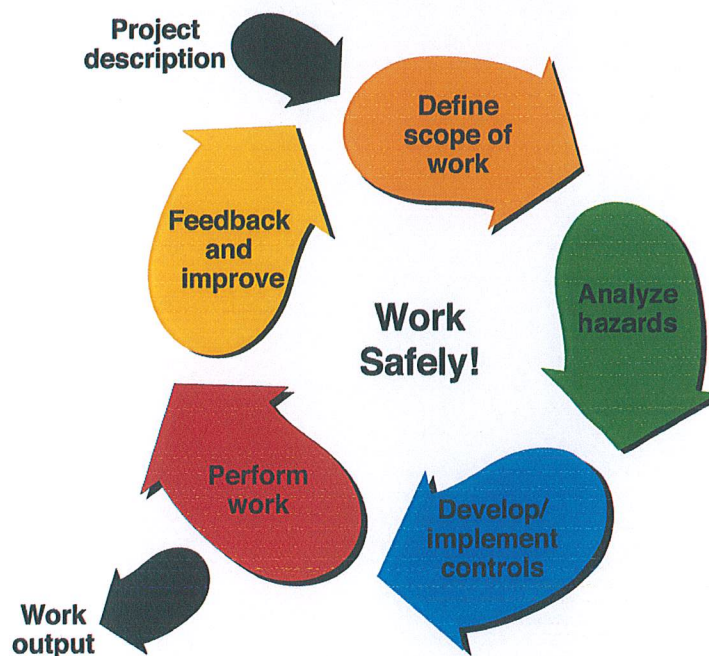
The five functions are:

- (1) Define the scope of work
- (2) Analyze the hazards
- (3) Develop and implement hazard controls
- (4) Perform work within controls
- (5) Provide feedback and continuous improvement

These five core ISM functions are accomplished by applying the seven guiding principles of ISM:

- (1) Line management responsibility for safety
- (2) Clear ES&H roles and responsibilities for managers and staff
- (3) Competence commensurate with responsibilities
- (4) Balanced priorities
- (5) Identification of ES&H standards and requirements
- (6) Hazard controls tailored to the work being performed
- (7) Operations authorization

The following is a diagram of the ISM work cycle:

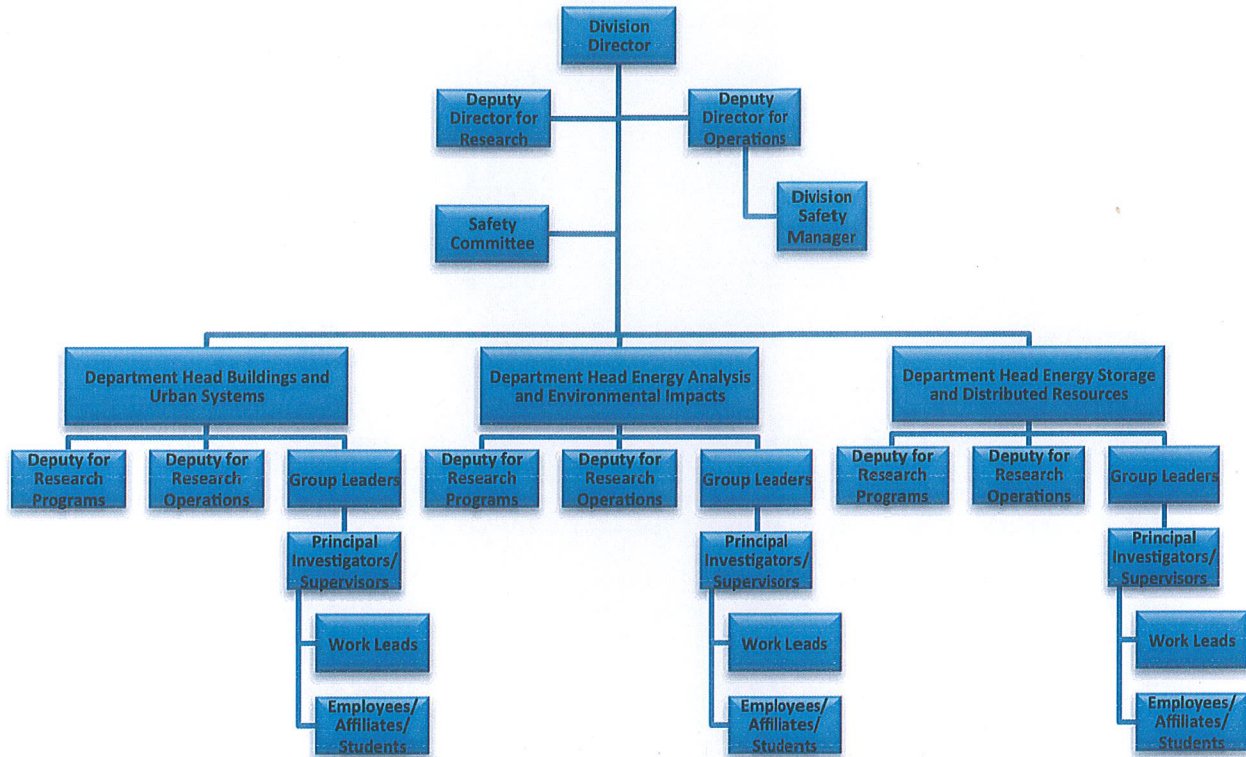


4. Division Safety Structure

The EETD Environmental Safety & Health (ES&H) program structure consists of the Division Director, the Deputy Division Director for Operations, the Deputy Division Director for Research, the Division Safety Manager, and the Safety Committee.

Each department conducts research in one or more buildings and rooms, has one or more Principal Investigators (PIs), and one or more Work Leads. Each lab or shop (Technical Area) has an Area Safety Leader assigned to coordinate safety issues.

The following is the EETD organizational chart:



5. Roles and Responsibilities

The following are roles and responsibilities for the various functions within EETD:

a. Division Director

- Assure that ES&H policies and programs are established and implemented within EETD.
- Ensure the EETD employee performance assessment process is used to hold each employee accountable for their ES&H obligations, responsibilities, and performance.
- Ensure that EETD provides sufficient resources for ES&H efforts.
- Leads the discussions on relevant safety issues at Division senior management meetings.
- Demonstrates line management commitment to safety, health, and environment by periodically walking through EETD workspaces.
- Establish committees as necessary to consider ES&H problems and recommend solutions to Safety Line Management.

- Appoints the EETD Safety Committee chair and Safety Advisory Committee (SAC) representative.
 - Reviews and approves revisions of this ISM Plan.
- b. Deputy Division Director for Operations
- Manages operational matters within the division including safety.
 - Leads the Division Research Operations Council, which is a resource for managing safety matters in the division departments.
 - Supervises the Division Safety Manager.
 - Participates in the Division Safety Committee.
- c. Deputy Division Director for Research
- Manages research matters within the division including safety.
 - Leads the Division Research Council, which is a resource for managing safety matters in the division departments.
 - Safety Manager has a matrixed reporting responsibility.
 - Participates in the Division Safety Committee.
- d. Department Heads
- Maintains overall responsibility for safety within their respective departments.
 - Leads discussions on relevant safety issues at their department meetings.
 - Performs at least one safety walkthrough each year of areas under their responsibility.
 - Provides the necessary resources within the department to ensure a safe and healthy work environment.
 - Reviews the status of key department health and safety metrics on at least a quarterly basis.
- e. Deputy Department Heads for Research Operations
- Supports operational matters within their department including safety.
 - Ensures that line managers within their department understand and follow the provisions of this Plan.
 - Ensures that all work areas within their department are operated in accordance with LBNL ES&H requirements.
 - Identifies personnel within their department that support key division safety activities such as Building Emergency Team (BET), Ergonomics Advocates, and Safety Committee members.
 - Participates in the Research Operations Council, which is a key resource for managing safety matters in the division departments.
- f. Deputy Department Heads for Research Programs
- Supports research programs within their department including consideration of safety requirements as new programs are developed.
 - Ensures that research performed within their department is in accordance with LBNL ES&H requirements.
 - Participates in the Division Research Council, which is a key resource for managing safety matters in the division departments.

g. Principal Investigators and Supervisors

- Ensures that all activities in their labs and related facilities are carried out in accordance with LBNL and EETD safety and health policies and procedures.
- Ensures work areas are well maintained and adequately supervised.
- Performs regular walkthroughs of work areas to ensure all personnel are following good safety practices.
- Assigns Work Leads as needed.
- Ensures that employees complete their Job Hazard Analysis and complete all required training.
- Participates in “Incident Review Teams” for any accidents involving their employees.
- Meets with assigned employees at least annually to discuss safety concerns and identify/evaluate job hazards. This is generally part of the annual performance review process.
- Ensure that new or significantly modified projects or facilities are reviewed for hazards in the planning stages.
- Consults subject matter experts when needed for identification of work hazards and controls.
- Ensures that all employees working within their project have received adequate “on the job” training on hazards and needed controls.
- Ensures that all off-site work is conducted safely and within regulatory requirements.

h. Work Lead

- Authorizes Job Hazard Analysis for employees assigned by their supervisor.
- Authorized to modify an assigned employee’s Job Hazard Analysis.
- Delegated with select safety responsibilities by their supervisor or manager with authority to perform specific assignments.

i. Area Safety Leader

- Ensures that day-to-day work activities in assigned work areas are conducted safely and within established work authorizations.
- Ensures that employees working within their work areas are aware of work hazards and controls. This includes “on the job” training.
- Reports any health or safety concerns identified to their supervisor.
- Ensures that any Satellite Accumulation Areas for hazardous wastes generated in their work areas are properly maintained.

j. Division Safety Manager

- Assist the EETD Division Director and senior staff in establishing and maintaining an effective safety culture at all levels of the division.
- Manage the division’s annual Self Assessment process.
- Serve as a point of contact for division staff regarding implementation and interpretation of ES&H policies, procedures, and programs.
- Conduct inspections and monitoring of EETD work activities to ensure that work is conducted in a safe and environmentally sound manner.

- Ensure that corrective actions for EHS issues within the division are identified, assigned, and completed in a timely manner.
- Coordinate accident and near-miss investigations within the division.
- Ensure that ES&H training is implemented within the division.
- Develop and delivers EETD-specific training.
- Ensure that compliance records and documentation are kept up to date.
- Coordinate the division ergonomics program.
- Generate regular ES&H communications to EETD employees.
- Provide support to the Safety Committee Chair and participates in Safety Committee activities.
- Provide regular ES&H metrics updates to the EETD senior management.
- Maintains the EETD Safety website.
- Consults with the ES&H Division Liaison as needed.

k. Safety Committee Chair

- Establish EETD Safety Committee meetings and agenda.
- Leads EETD Safety Committee meetings and ensures meeting minutes are distributed to committee members and senior management.
- Encourage feedback and participation by Safety Committee members.
- Provide consultation on strategic planning of the EETD safety program.
- Provides consultation on any proposed changes in ES&H policies or procedures.
- Ensure that the EETD Integrated Safety Management Plan is regularly reviewed and updated as needed.
- Participates in LBNL Safety Advisory Committee (SAC) meetings.

l. Building Emergency Team (BET) Members

- Complete required BET training courses.
- Participate in planned BET drills and pre-planning meetings.
- Assist employees when buildings are being evacuated.
- Provide primary first aid emergency care during building emergencies.
- Assists emergency responders such as the fire department.
- In the absence of the BET Lead and Building Manager, assume the BET Lead position.

m. Building Manager

- Complete required Building Manager training courses.
- Advise Facilities Division regarding building hazards relevant to planned construction/maintenance work.
- Coordinates building construction and maintenance activities within assigned buildings.
- Oversee the space management of their buildings.
- Serve as building representative/escort to visitors and compliance inspectors.
- Ensure the emergency preparedness of their buildings.
- Identify a Building Emergency Team (BET) Lead. If a Lead is not identified, the Building Manager will assume BET Lead responsibilities.
- Maintain a “Building Emergency Plan” and make available to building occupants and BET.

n. Employees, Students, Affiliates

- Conduct their work activities safely and in an environmentally sound manner at all times.
- Know how to respond to emergencies and incidents. Evacuate work areas when emergency alarms sound.
- Immediately call X7911 in the event of a chemical spill, fire, or serious injury.
- Immediately stop any activities, including the activities of others, which pose an imminent danger to personnel or the environment, and report these activities to their supervisor or work lead (see [Stop Work](#) policy).
- Complete their Job Hazard Analysis at least annually and follow all listed hazard controls and complete all required training.
- Promptly report all injuries, unsafe conditions, safety violations, and near-hits to immediately their work lead or supervisor.
- Report promptly to LBNL Health Services in the event medical attention is needed.
- Keep work areas clean and orderly at all times.
- Inspect tools and equipment prior to use.
- Wear proper personal protective equipment when required.
- Follow proper safety precautions when working with electrical equipment.
- Practice good work postures to avoid ergonomic related injuries. Report any discomfort promptly to your supervisor or work lead.

o. Subcontractors

- Complete the required S-JHA documentation and submit to the requesting supervisor or work lead.
- Follow all requirements listed in the S-JHA. See: <https://ehswprod.lbl.gov/sjha/login.aspx>
- Obtain proper LBNL authorizations prior to performing any hands-on work.
- Understand and follow the safety and health requirements that apply to their work.
- Observe and follow all posted warning signs.
- Notify their EETD contact in the event of any safety concerns or identification of a safety hazard.

p. Matrixed Employees

- Matrixed employees from other divisions have home and host division supervisors with complimentary responsibility for the employee's safe work practices and training.
- The host supervisor is responsible for ensuring matrixed employees have received appropriate training to perform their job safely for the tasks assigned.
- The home supervisor will ensure that the matrixed employee has received appropriate job-specific training from the host supervisor as well as training requirements generated by the JHA process.

q. Workers Working Off-Site

- Off-site workers must conduct work in a manner that complies with LBNL and EETD environment, safety and health (ES&H) policies and procedures.

- Off-site workers must conduct work in a manner that complies with all applicable regulatory requirements for the particular area work is being performed.
 - Off-site workers performing work at another national laboratory or institution will comply with the ISM Program, policies, and procedures of that institution.
 - The EETD Safety manager must be notified of any new projects involving off-site work prior to performing the work. This can be accomplished by the submittal of an "Off-Site Project Hazard Assessment" form. Forms are available on the [EETD Safety Website](#) or through the Division Safety Manager.
 - The employee supervisor and LBNL Health Services must be notified immediately of any off-site project related injuries.
- r. Workers Working at UC Berkeley
- EETD workers performing work at the UC Berkeley campus must conform to the "*Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures*" dated March 15, 2004, as provided in the LBNL Institutional ISM Plan:
http://www.lbl.gov/ehs/ism/ucb_lbl_partnership_3_15_04.pdf.
- s. Telecommuting Workers
- Complete and submit for supervisor and Division authorization a LBNL "Agreement and Authorization for Telecommuting" form. This form is available on the Human Resources website.
 - Employees are responsible for maintaining employee's off-site workspace in a safe condition, free from hazards to persons and equipment. If computer equipment will be used as part of the telecommuting function, the following activities must be completed and documented using the "Agreement and Authorization for Telecommuting" form and returning a copy to the supervisor and the EETD Safety Manager.
 - Complete the Ergonomics Self Assessment (EHS0059) training.
 - Conduct an ergonomic self-assessment of the immediate telecommuting work area.
 - Acquire and install the necessary ergonomic accessories identified in the self-assessment to assure the telecommuting work area provides controls against ergonomic risk exposures.
- t. Workers Working Alone
- EETD personnel are not allowed to work alone when the hazards associated with their work could incapacitate them to such a degree that they cannot "self-rescue" themselves or activate emergency services. Example hazards include:
 - Work involving exposed live electrical circuits >50V or 5mA.
 - Work with >2L of highly corrosive liquids.
 - Work with pyrophoric materials outside a glove box.
 - Quenching water reactive materials such as sodium.
 - Work with highly toxic incapacitating chemicals.
 - Changing toxic gas cylinders.
 - Use of stationary power tools such as a drill press.
 - Use of fall arrest or fall restraint equipment on elevated work surfaces.

- Use of aerial lifts, boom lifts, or scissor lifts.
- Entry into permit required confined spaces.
- The Working Alone Policy is implemented through Work Authorization (e.g., Activity Hazard Document [AHD], Radiological Work Authorization [RWA]) and Job Hazard Analysis (JHA) processes. Work is assessed to identify activities where the severity of mitigated hazards may prevent workers from self-rescuing or activating emergency services in the event of an accident. Authorizations for the identified work activities place restrictions on working alone.
- Work Leads may also determine that a working alone restriction is necessary for individual workers whose assignments are not covered by a Formal Authorization and place the restriction in the individual's JHA.
- **Working Accompanied** occurs when:
 - There is a second person within sight or earshot
 - The second person is available, agrees to, and understands his or her responsibilities
 - If the second person has to leave the area, the activity is considered to be Working Alone, and must terminate if prohibited in the Work Authorization.
 - See Pub-3000 Chapter 5.3 [Work Alone Policy](#) for further details.

u. EH&S Division Liaison

- Serves as designated EH&S Division point of contact to EETD.
- Requests that appropriate technical support be provided to implement and interpret LBNL ES&H policies.
- Knows the customer division's work activities, personnel, and associated hazards. Assists in hazard identification and the development of controls appropriate to the hazard and work being performed.
- Provides consultation to allow for resolution and closeout of the customer division's ES&H issues or concerns.
- Develops and/or leads cross-functional ES&H teams when necessary to assess complex operations and equipment.
- Participates in a customer division's self-assessment as requested and other ES&H assessments as required.
- Serves as the lead to coordinate an EH&S Division review of formal authorizations (e.g., Activity Hazard Documents (AHDs), which involves brokering the schedule of review dates with subject matter experts (SMEs) and the customer, and coordinating overall signoff.
- Participates in incident reviews of illnesses, injuries, accidents, and other safety and environmental incidents as requested by the incident investigation manager.
- In relation to assigned divisions or facilities, and in collaboration with his or her respective Division Safety Coordinators (DSCs), supports as requested, the elements of the ES&H program.

6. Division Safety Committee

The EETD Safety Committee consists of the following personnel:

- Committee Chair (Scientist appointed by the Division Director)
- Deputy Division Director Operations (Ex-Officio)
- Deputy Division Director Research (Ex-Officio)

- Division Safety Manager (Ex-Officio)
- Buildings and Urban Systems Department Representatives (2 members appointed by the Department Head)
- Energy Analysis and Environmental Impacts Department Representatives (2 members appointed by the Department Head)
- Energy and Distributed Resources Department Representatives (2 members appointed by the Department Head)
- Division Administrative Staff Representative
- EH&S Division Liaison (Ex-Officio)
- EETD Building Emergency Team Coordinator (Ex-Officio)

Other optional participants as needed: Division Director, Department Heads, Deputy Department Heads for Research Operations, DOE-BSO Representative, Human Resources Representative, Office of Contract Assurance Representative, EH&S Division Subject Matter Experts, interested employees.

The Safety Committee meets at least every other month or more often if issues warrant. The primary responsibilities of the Safety Committee are:

- Review available division safety data, identify trends and suggest appropriate corrective actions
- Assist in the development and implementation of effective environmental, safety and health (ES&H) programs.
- Consult on any proposed changes in safety and health policies, practices, and procedures.
- Provide feedback on EETD safety program strategic planning
- Act as a problem-solving group to help with the identification and control of hazards.
- Provide oversight of the EETD Self Assessment program
- Review annually and provide input to the update of the EETD ISM Plan
- Encourage feedback and participation from all individuals within the division with regard to health and safety related ideas, problems, and solutions

All safety committee meetings will be documented with meeting minutes. The meeting minutes will include a list of attendees and a listing of action items identified. The Safety Committee Chair is responsible for ensuring meeting minutes are generated and distributed to all Safety Committee Members, the Division Director, Department Heads, and Deputy Department Heads for Research Operations. The meeting minutes are also made available to EETD employees by posting on the [EETD Safety Website](#). See Attachment 1 for the "Safety Committee Charter".

Safety Advisory Committee Member

LBNL's Safety Advisory Committee (SAC) performs research for and makes recommendations to the Laboratory Director on the development and implementation of Environment, Safety & Health (ES&H) policy, guidelines, codes and regulatory interpretation. It conducts peer reviews of special safety problems and provides recommendations for possible solutions if requested to do so by the Laboratory Director. The EETD representative to the SAC is selected by the Division Director and is typically a researcher.

7. Description of Work and Associated Hazards

EETD staff performs office work, laboratory work (wet and dry), and off-site fieldwork. See the [LBNL Hazard Assessment System](#) for specific details of hazardous work performed by EETD. The following is a summary of the general hazards associated with these types of work:

Work Type	Hazards
Laboratory Work- Dry Lab	<ul style="list-style-type: none">• Electrical and mechanical hazards• Elevated work locations• Ergonomic hazards• Hand tool use• Soldering• Slip trip fall hazards
Laboratory Work- Wet Lab	<ul style="list-style-type: none">• Biohazards• Class 3B and 4 lasers• Compressed gases• Cryogenic liquids• Electrical and mechanical hazards• Ergonomics hazards• Flammable gases• Hazardous chemicals• Hazardous gases• Hot surfaces• Ionizing radiation• Engineered nanomaterial• Radioactive materials• Reactive metals• Slip trip fall hazards
Machine Shops	<ul style="list-style-type: none">• Compressed gases• Electrical and mechanical hazards• Flammable gases• Hand tool use• Machine tools and equipment• Welding and soldering
Office Work	<ul style="list-style-type: none">• Ergonomic hazards• Slip trip fall hazards
Off-Site Field Work	<ul style="list-style-type: none">• Compressed gases• Electrical and mechanical hazards• Elevated work locations• Ergonomic hazards• Hand tool use• Traffic hazards

8. Authorization of Work

Prior to commencing work, Supervisors and/or Principal Investigators will prepare ES&H documentation and obtain required authorizations for potentially hazardous or regulated work using the guidance specified in [PUB-3000 Chapter 6 “Safe Work Authorizations.”](#)

As the first part of the work planning process, workers and their work leads are required to determine the tasks that will be performed, consider the hazards, risks, and concerns associated with those tasks, and implement appropriate controls that will eliminate or reduce those hazards. The primary tool for work planning is the Job Hazard Analysis (JHA). These tasks, hazards and controls are specified in the JHA. The JHA must be approved by the work lead within 30 days of start date and is renewed annually. Work Leads must assure that employees know how to perform the work safely and in conformance with applicable requirements, and must provide on-the-job training as needed. See the “EETD JHA/Training Guide” located on the EETD Safety website for further information on submitting and maintaining JHA’s. Go to: <http://eetd-ehs.lbl.gov/content/job-hazard-analysis-jha>.

In order to identify appropriate authorizations for ES&H support of planned projects and work activities, EETD Principal Investigators and/or Supervisors should complete an “EETD Project Safety Review” form and submit it to the EETD Safety Manager at the time of proposal submission. This form is available on the [EETD Safety Website](#) or through the Division Safety Manager. The EETD Safety Manager will review the submitted EETD Project Safety Review form and determine what safety documentation or other authorizations will be required in order to perform the work safely. These requirements will be communicated to the requestor.

In some cases, external authorizations (regulatory permits) may be required as specified in [PUB-3000 Chapter 11 “Environmental Protection.”](#)

There are a number of work authorizations and formal work authorizations required at LBNL. These include:

- a. [Activity Hazard Document \(AHD\)](#)- includes chemical use that is pyrophoric, reactive, highly toxic, use of glove box for safety, stored energy >75,000 ft-lb, pressure >150 psig (gas), pressure >1500 psig (liquid). See this link for a complete listing of current AHD’s assigned to EETD work areas.
- b. [Biohazard Authorization](#)- required for most work with biological materials.
- c. [Energized Electrical Work Permit](#)- required for any work that might involve worker exposure to live, energized sources above 50 volts. Facilities can coordinate any electrical work if needed.
- d. [Generally Licensed Source Authorization \(GLA\)](#)- Sources exempt from NRC regulation, which require an LBNL authorization. Includes internal calibration sources, static eliminators, gas chromatographs, and electron capture devices.
- e. [Hot Work Permit](#)- required for activities such as welding, cutting or grinding that could produce sparks. Call (510) 486-6015 for a same-day hot work permit.
- f. [Human Subjects](#)- Research involving human subjects or human derived data or tissues must have a protocol reviewed and approved by the Human Subjects Committee (HSC).
- g. [Job Hazard Analysis \(JHA\)](#)- includes all personnel with a LBNL employee number assigned. See this link for a complete listing of current JHA’s completed by EETD personnel.

- h. [Laser Authorization](#)- required for work involving Class 3B and 4 lasers. An Activity Hazard Document (AHD) will be issued. See this link for a complete list of EETD work areas authorized for laser use.
- i. [Lock-Out/Tag-Out Permit](#)- required for any subcontractor work requiring the shutdown and control of hazardous energies.
- j. [Low Activity Source Authorization \(LAS\)](#)- Use or transfer of radiological material with very low activity levels.
- k. [Penetration Permit](#)- required for the penetration of any ground, wall or other surfaces greater than 1-5/8 inches.
- l. [Radiation Work Authorization \(RWA\)](#)- Long-term routine radiological projects.
- m. [Radiological Work Permit \(RWP\)](#)- Short-term non-routine radiological projects not covered by another radiological authorization.
- n. [Sealed Source Authorization \(SSA\)](#)- Radiological material encapsulated in a way that it is not released under normal circumstance.
- o. [Subcontractor Job Hazard Analysis \(sJHA\)](#)- required for all "hands-on" work performed by subcontractors/vendors. See this link for a complete list of s-JHA's assigned to EETD subcontractors.
- p. [X-Ray Use Authorization \(XA\)](#)- Equipment that produces X-rays beyond a contiguous vacuum.

9. Identification and Assessment of Hazards

There are a number of ways that EETD identifies and assesses potential ES&H hazards. This is accomplished through inspections, walkthroughs, self-assessments, and peer reviews.

Inspections and Walkthroughs

This includes regular inspections of EETD work areas and authorized work activities. They are summarized as follows:

Type	Purpose	Frequency	Who	Documents
Satellite Accumulation Area (SAA)	Ensure that hazardous wastes are properly stored, identified, and disposed within storage time limits	Quarterly	EETD Safety Manager, Waste Generator Assistant, Area Work Lead	SAA Inspection Check sheet
Lab Area Inspection	Maintain good safety and health practices in each lab, review lab records	Quarterly	Lab Safety Lead/PI	EETD Log for Safety Walkthroughs
AHD Renewal	Walk through area covered by AHD to ensure all hazards are identified/updated	Annual EETD Renewal/Three-Year EH&S Renewal	EETD Safety Manager, EH&S Liaison, PI	Updated AHD Form
Department Head	Promote safety culture, ensure	Annual	Department Head, Deputy Department	Management Checklist

Walkthrough	areas meet LBNL and EETD safety expectations		Heads Research Operations, EETD Safety Manager, EH&S Division Liaison	
Division Director Walkthrough	Promote safety culture, ensure areas meet LBNL and EETD safety expectations	Annual	Division Director, Department Heads, EETD Safety Manager, EH&S Division Liaison	Management Checklist
Self - Assessment Inspection	Walkthrough all EETD areas to identify key ES&H weaknesses and strengths.	Annual	Safety Committee	Self-Assessment Plan
Ergonomics Assessment	Address personnel discomfort due to work station set-up	On request	EETD Ergonomics Advocates, EH&S Division Ergonomics Assessors	Ergonomic Assessment Form

All inspections must be documented with the date, personnel involved, areas inspected, and findings. Any issues identified that require follow-up or further tracking should be entered into the [CATS \(Corrective Action Tracking System\)](#). For ergonomic assessment follow-up items, go to the [Ergonomics Database](#)

Annual Division Self-Assessments

The division self-assessment is a continuous process that evaluates EETD's worker safety, impacts to the environment, and the effectiveness of this Integrated Safety Management Plan. Each year, a Division Self-Assessment Plan is prepared that identifies 2-3 selected focus areas to be evaluated, the methodologies to be used, persons responsible, and evaluation timelines. As each focus area is completed, it is summarized in a Self-Assessment Report and submitted to the Office of Contract Assurance (OCA). The Division Self-Assessment Plan and past Self-Assessment Reports can be found on the [EETD Safety Website](#).

ES&H Peer Review

EETD periodically participates in the Safety Advisory Committee's ES&H peer review that evaluates implementation of Integrated Safety Management Systems for the Division Director. The peer review consists of individuals selected from outside the division that focus on areas of concern that are typically high-level management issues.

10. Qualification and Training

The supervisor will determine the requisite qualifications for all their employees, students, contractors, affiliates and visitors to function safely and in an environmentally responsible manner. Until such safety qualifications have been established and satisfied, individuals will only be allowed to work under the supervision of a qualified employee. An exception to this work under supervision rule is that any training related to a formal authorization must be completed before any

related work can be done under the authorization. Qualifications include skills, knowledge, training and certifications required by law or by Laboratory policy.

The employee's JHA Training Profile shows training courses that are required and recommended, and whether the requirements have been met. The employee, visitor, or affiliate updates his/her JHA annually, or upon any significant change in work tasks, hazards or controls. The supervisor ensures that the employee's required training is completed. New employees are required to complete the JHA before beginning work, and complete all required training within 60 days. For access to training records, log into the JHA system: [Job Hazard Analysis](#)

Job-specific ES&H training may include on-the-job training (OJT), mentoring, hazard-specific training, or training given off site by another facility or organization. OJT is training conducted and evaluated in the work environment through interaction between line management and the staff. It is used to supplement general EH&S training to provide detailed instructions and controls for performing a specific task or operation. Written documentation that describes the training and the means to evaluate successful completion should be kept by the supervisor. OJT record keeping is a line management responsibility.

See [PUB-3000, Chapter 24 "EH&S Training"](#) for a detailed description of the LBNL training program and requirements. Go to the [EH&S Division training website](#) for course descriptions and links to on-line training courses offered as well as registration for classroom training courses.

A summary of qualification and training requirements for various functions within EETD is as follows:

Work Type	Training
Managers, Supervisors	EHS0042- Implementing Safety-Supervisor/Work Lead BLI0117- Supervisor Responsibilities at LBL
Work Leads	EHS0042- Implementing Safety- Supervisor/Work Lead
All Employees- Staff, Affiliates, Post Doc, Students	EHS0470- General Employee Radiation Training EHS0010- Overview of EHS at LBNL EHS0059- Ergonomic Self Assessment for Computer Users
Division Safety Manager	BLI2012- Division ES&H Self-Assessment EHS0802- Reporting Adverse ES&H Occurrences in ORPS
Building Emergency Response Team	EHS0154- Emergency Team Training EHS0116- First Aid Training EHS0123- Cardiopulmonary Resuscitation Training (optional) EHS0520/EHS0522- Fire Extinguisher Training
Ergonomic Advocates	EHS0061- Ergo Advocate Training
Safety Committee	EETD Safety Committee Orientation Training
Specific Hazards- Chemicals, Lasers, Radiation, Elevated Work, Electrical, etc.	See Job Hazard Assessment for specific requirements. Typical courses include:

	EHS0170- Cryogen Safety EHS0171- Pressure Safety EHS0260- Basic Electrical Hazards and Mitigations EHS0278- Ladder Safety EHS0302- Laser Safety EHS0344- Safe Handling of Nanoscale Material EHS0345- Chemical Hygiene and Safety EHS0740- Human Subjects Research
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Some work activities also require medical surveillance or pre-qualification prior to performing certain types of hazardous work. See the [LBNL Health Services Clinical Services](#) website for specifics regarding medical surveillance requirements. Activities that require medical surveillance include the following:

- Class 3B and 4 Laser Use
- Respirator Use (includes face piece fit testing)
- High Noise Areas
- New Hire Physical (Voluntary)

11. Communications and Feedback

There are a number of ways to communicate safety and health information to the EETD population. This is accomplished through:

- a. [EETD Safety Website](#)
- b. Building Bulletin Boards
- c. Departmental and Division Employee Meetings
- d. Division Director and Department Head Safety Walkthroughs
- e. EETD "Safety Alerts" notices. See: <http://eetd-ehs.lbl.gov/content/safety-alerts>
- f. EETD Safety Metrics. See: <http://eetd-ehs.lbl.gov/content/safety-metrics-and-performance>
- g. Safety Committee Meeting Minutes. See: <http://eetd-ehs.lbl.gov/safety-committee-meeting-minutes>
- h. EETD "Safety Topics" training slides. See: <http://eetd-ehs.lbl.gov/content/job-training-ojt>
- i. [ES&H Training](#)
- j. [Emergency Response Guide](#)
- k. [Industrial Hygiene Exposure Monitoring Data](#)
- l. [Safety Data Sheet \(SDS\) database](#)
- m. "1 Minute for Safety" information sheets. See: [EHS Division "1 Minute 4 Safety" database](#)

Employees are encouraged to report unsafe conditions to their supervisor without fear of reprisal. Employees are also encouraged to ask questions or voice safety concerns at employee meetings. LBNL has established a means of reporting safety concerns through the ["Safety Concerns" website](#). In addition, concerns can be emailed to: safetyconcerns@lbl.gov or by calling X5514.

EETD personnel are recognized for positive contributions to the EETD safety program through the following means:

- a. Safety Spot Awards. See: <http://eetd-ehs.lbl.gov/content/spot-awards>
- b. Safety Hero cards. See: <http://hero.lbl.gov/>
- c. Performance review feedback from supervisor

12. Controls

There are a number of processes and programs available to proactively control hazards in the workplace. These are fully described in PUB-3000 "Health and Safety Manual". The specific sections are referenced and linked for each control for more detailed information. Controls for hazards commonly found in EETD include:

- a. **Biohazards**- see [PUB-3000, Chapter 26 "Bio-Safety"](#)
- b. **Chemicals**- see [PUB-3000, Chapter 4.7 "Chemicals"](#), see also [PUB-5341 "Chemical Hygiene and Safety Plan"](#)
- c. **Cryogenics**- see [PUB-3000, Chapter 7 "Pressure Safety and Cryogenics"](#)
- d. **Electrical**- see [PUB-3000, Chapter 8 "Electrical Safety"](#)
- e. **Engineered Nanomaterials** – see [PUB-5341- Controls for Engineered Nanomaterials](#)
- f. **Ergonomics**- see [PUB-3000, Chapter 17 "Ergonomics"](#)
- g. **Exposure Monitoring**- see [PUB-3000, Chapter 18 "Exposure Assessment"](#)
- h. **Fall Protection**- see [PUB-3000, Chapter 30 "Fall Protection Program"](#)
- i. **Fire Prevention and Protection**- see [PUB-3000, Chapter 12 "Fire Prevention and Protection"](#)
- j. **Gases**- see [PUB-3000, Chapter 13 "Gases"](#)
- k. **Hoods and Ventilation**- see [PUB-3000, Chapter 4.6 "Ventilation, Hoods, and HEPA Filters"](#)
- l. **Hazardous Waste**- see [PUB-3000, Chapter 20 "Waste Management"](#)
- m. **Human Subjects**- see [PUB-3000, Chapter 22 "Research with Human and Animal Subjects"](#)
- n. **Ionizing Radiation**- see [PUB-3000, Chapter 21 "Radiation Safety"](#)
- o. **Lasers**- see [PUB-3000, Chapter 16 "Laser Safety"](#)
- p. **Lock-Out/Tag-Out**- see [PUB-3000, Chapter 16 "Lock-out/Tag-out and Verification"](#)
- q. **Medical Surveillance**- see [PUB-3000, Chapter 3 "Health Services"](#)
- r. **Non-Ionizing Radiation**- see [PUB-3000, Chapter 4.4 "Non-Ionizing Radiation"](#)
- s. **Personal Protective Equipment**- see [PUB-3000, Chapter 19 "Personal Protective Equipment"](#)

13. Accident Investigation

Accident reporting and investigation requirements are detailed in [PUB-3000, Chapter 5.1 "Incident Reviewing and Reporting."](#)

a. Injuries

All occupational injuries and illness cases must be reported promptly to your supervisor and LBNL Health Services. Typically, the supervisor will direct the injured employee to report to Health Services for evaluation and treatment. When the injured employee does not or cannot report to Health Services at the time of injury, the supervisor must promptly notify Health Services of the injury. Health Services will initiate the Incident Review process by notifying the supervisor, Division Safety Manager, and Occupational Safety Group. Health Services will also initiate any required reports for workers' compensation purposes.

In the event of off-hour injuries, report to the Fire Department **X7911** for first-aid treatment or for transport to off-site medical care. The Fire Department will notify Health Services to initiate all required reviews and reporting.

For work-related injuries that occur off site or away from the Laboratory, the injured employee or supervisor must notify Health Services as soon as possible. Also notify Health Services of injuries to student employees who were treated at the UC Berkeley Tang Center.

Certain injuries may be reportable to DOE and/or BSO as required by the “Occurrence Reporting and Processing System” (ORPS). There are levels of reporting and reporting timelines depending on the severity of the injury. See [PUB-3000, Chapter 15 “Occurrence Reporting”](#) for specific details.

b. Near Hit

A near hit is an event that could have caused a serious injury or illness, but didn’t. Reporting these types of events helps to identify hazards and facilitate safety improvements in the workplace. A near hit should be reported to your supervisor or the EETD Safety Manager for follow-up. If necessary, a [Corrective Action Tracking System \(CATS\)](#) report should be issued to prevent a recurrence.

c. Lessons Learned

In the course of our work, we may experience either improved work practices or adverse situations that may benefit others if they are made aware. When we share “lessons learned,” it can prevent a repeat incident or increase the likelihood of a positive outcome. EETD employees are encouraged to share ES&H lessons learned with their fellow workers and their supervisor. Go to [Lessons Learned and Best Practices](#) to submit a lesson learned.

14. Non-Conformance

There are several processes available for identifying and correcting EH&S issues, hazards or compliance matters. These include the following:

- a. Corrective Action Tracking System (CATS)- This system is used for tracking of corrective actions associated with accidents, near miss events, inspections, walkthroughs, and other ES&H related issues. A corrective action request is electronically generated in the CATS system by going to: [Corrective Action Tracking System](#). The request is assigned and tracked until resolution.
- b. Occurrence Reporting and Processing System (ORPS)- Significant incidents and occurrences related to the environment, health, and safety must be reported to Lab management and the Department of Energy in a prompt manner. There are various types of reportable occurrences and reporting levels. See [PUB-3000, Chapter 15 “Occurrence Reporting”](#) for specific details.
- c. Work Request- Some safety issues can be resolved by using the formal Facilities work request system. Some safety issues can be given priority and addressed quickly. The Facilities Work Request Center can be accessed by going to: [Facilities Work Request System](#)

- d. Safety Concerns- Employees are encouraged to report unsafe conditions. LBNL has established a means of reporting safety concerns through the [“Safety Concerns” website](#). In addition, concerns can be emailed to: safetyconcerns@lbl.gov or by calling X5514.
- e. Stop Work- All EETD employees, sub-contractors, and participating guests are responsible for immediately stopping work activities that are considered to be an imminent danger and reporting them by calling **X6999**. The “stop work” policy can be found at: [Stop Work](#)

15. Performance Monitoring

The EETD Safety Manager will track key safety and health metrics to monitor the effectiveness of this ISM Plan. The following EETD data will be tracked on a monthly basis:

- Accidents, Incidents, Near Miss
- Job Hazard Analysis (JHA) status
- Safety Training status
- Inspection Status
- Open Corrective Action Requests
- Open Ergonomic Assessments and Follow-up Actions
- Activity Hazard Document (AHD) status
- Significant Safety Events and Lessons Learned

The EETD Safety Manager will distribute the key safety and health metrics results to the Division Director, all Safety Committee members, and EETD Department Heads and Deputy Department Heads for Research Operations on at least a quarterly basis. The metrics will also be communicated to EETD employees by posting to the [EETD Safety Website](#), central bulletin boards in EETD occupied buildings, EETD Safety website, and presented at periodic employee meetings.

16. Emergency Response

All EETD personnel must understand how to call for emergency assistance if needed and how to safely evacuate their work area/building. See [PUB-3000, Chapter 9 “Emergency Services”](#) for details on LBNL emergency requirements. EETD requirements are as follows:

- a. Emergency Notification
 - For life threatening events such as: fire, chemical spill, or serious injury immediately call **911**.
 - For non-life threatening emergencies, immediately call **X6999** or **(510) 486-6999**.
 - [Emergency Response Guides](#) are posted in all EETD building hallways and lab areas.
 - Building occupants are notified of emergencies through activation of the building fire alarm system, public address system, and the “Lab Alert” system.
 - LBNL maintains a voluntary cell phone emergency alert broadcast system called “Lab Alert”. To register go to: [Lab Alert](#).
- b. Building Evacuation
 - Building evacuation location maps are posted in all EETD building lobbies.
 - In the event of fire alarms, immediately evacuate the building.
 - Evacuate immediately.

- Walk, do not run.
 - Do not use elevators.
 - Report to the building assembly area.
 - Do not leave the assembly area unless instructed to do so.
- c. Fire Extinguishers
- Fire extinguishers are located near all EETD buildings and lab areas.
 - Employees who have completed EHS0520 and EHS0522 “Fire Extinguisher Safety” are authorized to extinguish a small fire.
 - Fire extinguishers must be properly maintained and readily accessible.
 - Class D fire extinguishers are available near lab areas that use water reactive metals.
- d. Chemical Spill Clean-up
- The following requirements must be met prior to attempting a chemical spill cleanup:
 - High school students and interns are NOT permitted to perform cleanups.
 - There is no potential release to the environment.
 - There are no personal injuries resulting from the spill.
 - The chemical hazards are known.
 - Clean-up procedures are known and proper cleanup materials are available.
 - Proper personal protective equipment is available and worn.
 - The spill can be cleaned-up by two people in one hour or less.
 - All personnel have completed EHS0348 “Chemical Hygiene and Safety Training”.
 - The spill does not involve elemental mercury or beryllium.
 - If chemical spill cleanup requirements are not met or if there are any doubts about the ability to effectively cleanup the spill, then leave the area immediately.
 - Close the door.
 - Call **911** for fire department assistance.
 - Stay close by and control access.
 - Post the entrance with a warning label stating “SPILL- DO NOT ENTER”
 - EETD chemical usage areas must have adequate spill cleanup supplies available for addressing small spills.
 - Follow S.W.I.M.S for responding to chemical spills:
 - Stop and Think
 - Warn Others
 - Isolate the Area
 - Monitor Yourself Carefully and Completely
 - Stay In or Near the Area Until Help Arrives
- e. Emergency Shower/Eyewash
- Emergency eyewash/shower stations are located in EETD lab areas where hazardous materials are used.
 - Emergency eyewash/shower stations must be properly maintained and readily accessible.

- In the event of chemical contact, rinse the exposed area for a minimum of 15 minutes. Seek immediate medical attention.
- f. Building Emergency Teams (BET)
 - EETD maintains Building Emergency Team members in Buildings 62, 70, and 90.
 - Each BET member completes EHS0154 “Emergency Team Training”, EHS0520 “Fire Extinguisher Part 1”, EHS0522 “Fire Extinguisher Part 2” and EHS 0116 “First Aid” training. Cardiopulmonary (CPR) training is optional.
 - The BET will assist employees when evacuating the building and ensure that a headcount is taken.
 - The BET will assist any emergency responders from the fire department.
- g. Continuity of Operations Plan (COOP)
 - EETD maintains a Continuity of Operations Plan (COOP) for planning in the event of a major disruption in operations such as significant earthquake, fire, etc.
 - The COOP contains key EETD personnel contact information.
 - The COOP will be reviewed and updated annually under the direction of the Deputy Division Director of Operations.

17. ES&H Resources

Principal Investigators are expected to incorporate appropriate resources for ES&H needs in all research proposals, to include provisions for safety equipment, permits, training, maintenance, waste disposal, and facilities modifications.

EETD ISM Plan Annual Update Approved By:



Ashok Gadgil
EETD Division Director

Date: April 1, 2014

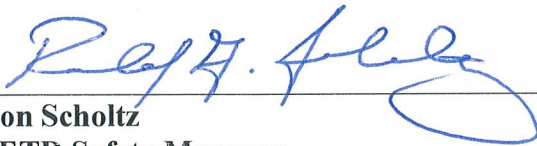
Robert Kostecki
EETD Deputy Division Director for Research

Date: _____



Mary Sidney
EETD Deputy Division Director for Operations

Date: 4/1/2014



Ron Scholtz
EETD Safety Manager

Date: 4/1/14

ATTACHMENT 1

EETD Safety Committee Charter

Mission Statement:

The mission of the EETD Safety Committee is to develop and promote a healthy and safe work environment for all EETD employees and visitors. It will encourage and promote safety awareness and participation. It will monitor and continually improve division safety performance in a proactive manner.

Responsibilities:

- Review available division safety data, identify trends and suggest appropriate corrective actions
- Assist in the development and implementation of effective health and safety programs.
- Consult on any proposed changes in safety and health policies, practices, and procedures.
- Coordinate strategic planning of the EETD safety program.
- Act as a problem-solving group to help with the identification and control of hazards.
- Oversight of the EETD Self Assessment program
- Annual review and update of the EETD ISM Plan
- Encourage feedback and participation from all individuals within the division with regard to health and safety related ideas, problems, and solutions

Membership:

- Committee Chair (Scientist appointed by the Division Director)
- Deputy Division Director Operations (Ex-Officio)
- Deputy Division Director Research (Ex-Officio)
- Division Safety Manager (Ex-Officio)
- Buildings and Urban Systems Department Representatives (2 members appointed by the Department Head)
- Energy Analysis and Environmental Impacts Department Representatives (2 members appointed by the Department Head)
- Energy and Distributed Resources Department Representatives (2 members appointed by the Department Head)
- Division Administrative Staff Representative (Appointed by Deputy Division Director Operations)
- EH&S Division Liaison (Ex-Officio)
- EETD Building Emergency Team Coordinator (Ex-Officio)

Other optional participants as needed: Division Director, Department Heads, DOE-BSO Representative, Human Resources Representative, Office of Contract Assurance Representative, EH&S Division Subject Matter Experts, interested employees.

Appointed members will serve a term of 2 years. Ex-Officio members will serve continually on the committee. All members are expected to regularly participate in the committee meetings and activities. The time commitment for each committee member is estimated at between 12-15 hours per year.

Meeting Frequency and Format:

The committee will meet at least once every other month (bimonthly). The committee chair may call additional meetings as needed. The committee chair will establish a meeting agenda and distribute to all members prior to each meeting. All meetings will be documented with meeting minutes. The meeting minutes will document attendance and any action items or recommendations generated by the participants. Minutes are distributed to all committee members, the Division Director, all Department Heads, and any other meeting participants.

Training and Awareness:

All new committee members will receive a brief training orientation on safety committee responsibilities. The committee chair will be responsible for ensuring this training occurs.

ATTACHMENT 2

Useful Safety and Health Links

1 Minute 4 Safety Database: http://www.lbl.gov/ehs/safety_minute/index.shtml
Accidents/Injury Reporting: https://iswiprod.lbl.gov/saar/Login.aspx
Accident Statistics: http://www.lbl.gov/ehs/safety/accidentStatistics.shtml
Activity Hazard Document (AHD) website: https://ehswprod.lbl.gov/ahd/login.aspx
Chemical Management System (CMS) website: https://cms.lbl.gov/jsp/general/features.jsp
Corrective Action Tracking System (CATS) website: https://isswprod.lbl.gov/cats/login.aspx
Department of Energy website: http://energy.gov/
EETD JHA/Training Guide: http://eetd-ehs.lbl.gov/content/job-hazard-analysis-jha
EETD Safety Website: http://eetd-safety.lbl.gov
EH&S Division Website: http://www.lbl.gov/ehs/
EH&S Subject Matter Experts: http://www.lbl.gov/ehs/html/subject_matter.shtml
EH&S training website: http://www.lbl.gov/ehs/training/index.shtml
Electrical Safety website: http://electricalsafety.lbl.gov/
Emergency Response Guides: http://www.lbl.gov/ehs/ep/erg/index.shtml
Emergency Services website: http://www.lbl.gov/ehs/ppls/
Ergonomics Evaluation website: https://ehswprod.lbl.gov/Ergo/Login.aspx
Ergonomics Product Catalog: http://www.lbl.gov/ehs/ergo/catalog/chairs.shtml
Exposure Monitoring Data: http://www.lbl.gov/ehs/ih/
Facilities Work Request System: https://workrequest.lbl.gov/jsp/workreq_login.jsp
Hazardous Waste website: http://www.lbl.gov/ehs/waste/index.shtml
Health Services website: http://www.lbl.gov/ehs/health_services/
Human Subjects website: http://www.lbl.gov/ehs/health_services/harc/hsc.shtml
Job Hazard Assessment (JHA) website: https://ehswprod.lbl.gov/ehstraining/jha/login.aspx
Lab Alert System: https://commons.lbl.gov/display/itdivision/LabAlert+-+Emergency+Broadcast+Service
Laser Safety website: https://lms.lbl.gov/index.jsp
LBNL Buildings Seismic Information: https://commons.lbl.gov/display/fac/Seismic+Status
Lessons Learned and Best Practices website: https://isswprod.lbl.gov/lessonslearned/login.aspx
Personal Protective Equipment information: http://www.lbl.gov/ehs/safety/ppe.shtml
PUB-3000 Health and Safety Manual: http://www.lbl.gov/ehs/pub3000/
Radiation Safety website: https://ehswprod.lbl.gov/rpg/
Safety Datasheet (SDS) website: http://www.ucmsds.com/?X
Subcontractor s-JHA website: https://ehswprod.lbl.gov/sjha/login.aspx
Ventilation database: https://ehswprod.lbl.gov/ventilation/Login.aspx